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(54) Title: METHOD AND APPARATUS FOR IMPROVING ASYNCHRONOUS TRANSFER MODE OPERATION OVER NOISY, HIGH SPEED WIRELESS LINKS

(57) Abstract

In an asynchronous transfer mode (ATM) system, an apparatus is used to improve the transmission and reception of encoded ATM information over a wireless link having an encoder for encoding the information, assembling the information into a frame format and interleaving of the information for transmission over the wireless link. In addition, the apparatus also has a decoder for decoding information received via the wireless link which was encoded by a similar apparatus transmitting the information over the wireless link. Further, methods utilized by the encoder and decoder to improve transmission include increasing the bandwidth efficiency by dropping a header byte from every ATM cell; assembling separate header and payload frames; utilizing and rearranging idle/unassigned cells in the payload frame for storing and, thereby, increasing error correction code in the frame; dynamically changing the coding of frame in real time from one payload frame to optimize utilization of the mumber of available idle/unassigned cells occurring in each frame; restoring the positions of all idle/unassigned cells to their original position at a receiving end in order to leave the Cell Delay Variation unaffected; interleaving the frames to reduce burst errors during transmission; preservation of overhead parity bits present in the original frames received from a wireline link; cell Header error detection and correction through the use of a generated syndrome; and a synchronization pattern detection method during decoding.